

INSTALLATION

To install your new tools, follow these instructions:

- 1) Get into the QuickEditor by going TOOLS-QUICKEDITOR.
- 2) Click TRANSFER.
- 3) Select the second button: "Transfer Analysis Techniques FROM EasyLanguage Archive File (.ELA)".
- 4) Find the floppy disk through BROWSE-DRIVES-A:.
- 5) A list will appear with possible tools to transfer. Select the one you wish to transfer by clicking on it then hitting OK-OK.
- 6) Choose "Transfer All."
- 7) If there are more tools you wish to transfer from the same disk, just repeat these steps.

INDEX OF FUNCTIONS

The following user functions have been included:

MA_Predict(pred,ahead,lookback,wildness): Calculates a prediction of any indicator *ahead* bars in advance.

pred refers to the indicator which will be predicted.

ahead refers to how many bars ahead MA_Predict should try to predict. Default is 2.

lookback refers to how many bars of the predicted indicator MA_Predict should study to find a prediction. Default is 30, maximum is 150.

wildness will control how much predictions will be allowed to stray from current indicator values. High wildness will allow more flexibility and more error on the part of MA_Predict while small values will keep predictions closer to current values. Default is 0.15.

MA_PredictDELUXE(pred,x,y,z,ahead,lookback,train): Calculates a more advanced type of prediction by using up to three inputs.

pred refers to the indicator which will be predicted.

x is the first input which will be used to generate the prediction.

y is the second input which will be used.

z is the third input which will be used.

ahead refers to how many bars ahead MA_PredictDELUXE should try to predict. Default is 2.

lookback refers to how many bars of the input indicators MA_PredictDELUXE should study to obtain its prediction. Default is 50, maximum is 150.

train refers to how often MA_Predict should reoptimize its weighting of each input. A value of 1 would retain every bar, while a value of 10 would retrain every ten bars. Default is 5.

MA_Predict and MA_PredictDELUXE are two tools designed to reduce lag and forecast future values of any indicator. The difference between them is that MA_Predict uses only the predicted indicator to generate its output while MA_PredictDELUXE can use any three inputs to do the same. Using three different indicators results in more accurate predictions, but also requires more time to arrive at those predictions.

These predictions use self-optimizing technology, which means that on each bar (or every *train* bars in the case of the deluxe version) the prediction error over the entire look back period will be calculated and used to reoptimize the calculation for the next bar. As MA_Predict steps forward in time, it is making constant adjustments to the method it uses to generate predictions and to adapt itself to current market conditions. This results in an adaptive prediction tool which will not ever get out of sync with the market or need to be retrained as in the case of neural networks, for example.

These tools are just as easy to use as any other indicator. Simply add them to your chart, adjust the inputs to suit your tastes, and you are off and running. However, please be aware that these tools are computationally intensive, and may take a long time to evaluate if you have a long data series or a slow computer. If you are a day trader, it may be unwise to apply MA_PredictDELUXE to a one-minute chart that goes back 15 days, since you may lose some data while your computer evaluates the study.

Now let us discuss the usage of each indicator in more depth starting with MA_Predict. This indicator is best used to reduce lag and works very well with moving averages or other smoothed indicators. It is very difficult to predict something that jumps around like a rabbit, and you will get better results if you apply these tools to smoothed or longer term indicators. It is also much easier to predict what will happen tomorrow as opposed to what will happen next month, so try and keep your settings at reasonable levels.

If we were going to use MA_Predict to try and reduce the lag in a 10 day simple moving average, it would look like this:

`MA_Predict(average(c,10),2,30,1)`. What this is telling the computer is that we want to try and predict the 10 day moving average 2 days ahead, using a 30 bar lookback period with a wildness setting of 1. This will give us a timelier moving average indicator, as you will see if you try this yourself.

A little should be said here about the wildness setting. MA_Predict has a tendency to overshoot at turning points, which can either be a good or a bad thing depending on how you are using the indicator. If you are a discretionary day trader, the overshoot can actually alert you to a potential turning point being formed and you might want large overshoots. If you are using MA_Predict in a neural net or are concerned about accuracy, you might not want large overshoots and might prefer that MA_Predict not stray too far from the original indicator. The wildness setting will allow you to customize MA_Predict to your own needs.

Specifically, wildness refers to how much predictions can vary from current indicator levels. If you have a wildness setting of 0.15, you

are telling MA_Predict that its predictions should not be greater or less than 15% of the current indicator values. A wildness setting of 1 would allow the prediction to be 100% greater or less than the original, while a setting of 0 would allow no variation at all. The default value is 0.15, but we have found that the best settings often depend on what you are using MA_Predict to forecast. If you are forecasting a slow moving average, large settings will probably work better for you. If you are forecasting something that is jumpy and has little lag already, you will probably be better served with smaller wildness settings.

MA_PredictDELUXE is basically the same as MA_Predict but uses up to three inputs instead of only one. MA_PredictDELUXE works best with different length values of the predicted indicator, but there are no restrictions on what the inputs should be. If we were going to try and predict the 10 bar simple moving average with the deluxe version, we would do it like this: MA_PredictDELUXE(average(c,10), average(c,10), average(c, 7), average(c, 13), 2, 50, 5). This tells the computer that we wish to predict the 10 bar average of the closes using ten, seven, and thirteen bar moving averages. We wish to forecast 2 days ahead, will use a lookback period of 50 bars, and will retrain every five bars.

The wildness setting has vanished, and we have the train setting in its place. Since the predictions from the deluxe version tend to be more accurate, overshoot is not a problem so the wildness setting is no longer useful. However, due to long training times, it is no longer always feasible to retrain on every single bar. To save time, we can tell the computer to retrain every *train* bars instead, which will give us similar results. We have found 5 bars to be a good setting for train, but you may wish to experiment and find what works best for your own application. Remember that longer charts and more

frequent training will result in more computation, which may cause difficulties if day trading using short bar lengths.

TROUBLESHOOTING

Depending on your computer, you may find that every now and then TradeStation will suddenly refuse to calculate MA_PredictDELUXE. Instead of the expected prediction, the chart will show nothing or all zeros. This seems to happen on computers with limited memory or too many other programs open. TradeStation must store a lot of data when computing MA_PredictDELUXE, and will give up if it does not have enough memory.

To solve this problem, try closing other open programs and workspaces to free up memory. If this does not help, you will have to restart the charting program itself (although you can leave the PowerEditor and Data Server running.) This should fix the problem in almost all situations.

If this happens frequently, you may wish to consider a memory upgrade for your computer.

CONTACT INFORMATION

We hope you find your new tools useful and trouble free. If you do have problems or questions, you may contact Erik Been at (303) 494-7613 or may send email to erik@marketanalytics.net. Also, you may wish to check www.marketanalytics.net often to keep ahead of new products or offerings.

Good Trading!

INSTRUCTIONS FOR CREATING SUPERCHARTS INDICATORS

Since the PowerEditor version of our indicators will not work in SuperCharts, users of this program will occasionally need to create their own indicators using the QuickEditor. This is no reason to worry, since compatible indicators can be created from within SuperCharts using the following instructions:

- 1) Start SuperCharts and open the QuickEditor.
- 2) Click the indicator tab to specify that you wish to make an indicator and select "New."
- 3) Name your new indicator. We like to start everything off with "MA_" so that all of our tools are together, but the name is entirely up to you.
- 4) Click the "Inputs" tab and fill in the blanks with the names of the inputs. The appropriate inputs for your function can be found at the front of this manual under the Index of Functions section. Keep the same names to avoid confusion.
- 5) Once the inputs have been specified, click the "Formula" tab and fill in the blank next to Plot1 with the function name including inputs. Copy it as it has been written in the Index of Functions in this manual or use the Function Wizard at the bottom of the screen to select it from the list of available functions.
- 6) If you wish to add other plots, do them now. Buy zones, sell zones, and zero lines are always useful. In the case of MA_Predict, you may also wish to plot the original predicted variable for comparisons sake.
- 7) Next click the "Style" tab and set the colors for each plot.
- 8) After you have set the colors, you should go to scaling and make sure the settings match what you wish to plot. Choose "Screen" if you want the indicator to be separate from the price data. Choose "Same

as Price Data” if you want the indicator to be overlaid on top of price as in the case of moving averages.

9) Now you should be done. Click the OK button and SuperCharts will verify your study. If there are problems you will be warned.

10) Your indicator is complete. Open a chart and click on INSERT-ANALYSIS TECHNIQUES-INDICATORS. Find your indicator and select it to apply it to the chart.

Market Analytics

MA_Predict Manual